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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,067	09/15/2003	Toru Inuzuka	KANEKO.009AUS	2430

7590

07/22/2005

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EXAMINER

GATES, ERIC ANDREW

ART UNIT

PAPER NUMBER

3722

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

C

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/663,067	INUZUKA, TORU	
	<b>Examiner</b>	<b>Art Unit</b>	
	Eric A. Gates,	3722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/16/2003
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 2003-033064, filed on February 12, 2003.

### ***Specification***

2. The disclosure is objected to because of the following informalities: on page 4, line 6, the word "sixteenth" should be changed to "eighteenth".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. Claims 1- 4, 6-15, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori (U.S. Patent 4,325,664) in view of Chandrasekar (U.S. Patent 6,036,413) and the Machinery's Handbook (Erik Oberg, et. al., 26<sup>th</sup> edition). Mori discloses a cutting tool assembly including an arbor head 10 with a tapered shank and an annular flange portion (in figure 2, not referenced), and a cutting tool 21 having an unspecified number of blades, which is attached to said arbor through respective contact surfaces by means of a bolt 12. Mori also discloses a set of two pins 27 attached to said arbor 10 which fit into two arcuate grooves 29 on the cutter 21, and which are used to prevent relative rotation of the arbor 10 and cutting tool 21. Mori

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further discloses a positioning hole 26 on the cutting tool that correlates with a positioning collar 14 on the arbor. Additionally, figure 2 shows a pair of driving slots (not referenced), which do not overlap with the arcuate grooves 29. Mori does not disclose a taper value or size on the arbor, a cutting tool assembly weight, the dimensions of the positioning hole and boss, the axial length of the cutting tool, or the cutting diameter of the face milling cutter.

4. It is well known in the art to use an arbor with a tapered shank that has a taper of 7/24 and a size of No. 30, as is taught in Table 2, page 922, of the Machinery's Handbook. Also, at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to use a positioning hole and positioning boss inside and outside diameter, respectively, of not smaller than 22 mm and not larger than 27 mm for the purpose of weight reduction of the cutting tool assembly, because such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art, absent any showing of unexpected results. Furthermore, it would have been an obvious matter of design choice to make the positioning hole and boss of whatever form or shape was desired or expedient for the purpose of weight reduction of the cutting tool assembly. A change in form or shape is generally recognized as being within the level of ordinary skill in the art, absent any showing of unexpected results.

5. Chandrasekar teaches the idea of reducing the spindle size 12, and thereby weight, while still providing a stiff and stable system for highly accurate machining for

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the purpose of taking loads similar to those borne by larger diameter spindles.

Therefore it would have been obvious to one having ordinary skill in the art to have modified the arbor of Mori with a spindle of reduced size as taught by Chandrasekar in order to use a cutting tool normally used on larger spindles, such as a face milling cutter with a cutting diameter of 80-160 mm, and with an axial length of not larger than 40 mm for the purpose of increased rigidity and reduced overall weight, so as to obtain a cutting tool assembly weight not larger than 3 kg.

6. Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori in view of Chandrasekar and the Machinery's Handbook, and further in view of Hecht (U.S. Patent 6,276,879). The modified process of Mori discloses the invention substantially as claimed except the number of blades used on the cutting tool. Hecht discloses the use of cutting heads 1 with three blades and five blades for the purpose of creating a cutting tool that is balanced about the axis of rotation. Therefore it would have been obvious to one having ordinary skill in the art to modify the cutting tool of Mori with the number of blades used by Hecht in order to obtain a cutting tool where the number of blades is not larger than six.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matsumoto (U.S. Patent 5,593,258) teaches the use of spindle with a tapered shank of 7/24 and the use of an axial screw to connect the tool to the spindle. Reed (U.S. Patent 3,586,343) teaches the use of a spindle with a tapered shank, a fastener for fastening the tool to the adapter, and the use of a cutting tool with only one blade. Ewing (U.S. Patent 4,583,890) teaches the use of protrusions on the spindle nose used as drive keys that are matched with slots on the drive ring. Savoie (U.S. Patent 5,678,967) teaches the use of protrusions on the cutting tool that are matched with holes on the spindle. Fujii (U.S. Patent 5,660,480) and Yamamoto (U.S. Patent 5,383,261) teach the advantage of reduction of weight of the spindle and machine tool, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric A. Gates whose telephone number is 571-272-5498. The examiner can normally be reached on Monday-Thursday 7:00-4:30 & alt Fridays 7:30-4:00.

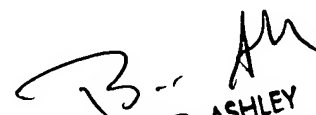
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
EAG

Eric A. Gates  
Patent Examiner  
Art Unit 3722

  
BOYER D. ASHLEY  
PRIMARY EXAMINER